| | Application No. | Applicant(s) |
|---|---|---|
| ***Notice of Allowability*** | 10/616,638 | CASTAGNA ET AL. |
| | Examiner | Art Unit | |
| | Elias Desta | 2857 | · |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--*

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *amendment filed on February 28, 2005*.

2. ☒ The allowed claim(s) is/are *1-6*.

3. ☒ The drawings filed on *09 July 2003* are accepted by the Examiner.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some*   c) ☐ None  of the:

       1. ☐ Certified copies of the priority documents have been received.

       2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

       3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

    * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.

    (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached

       1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____ .

    (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of

       Paper No./Mail Date _____ .

    **Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)

3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____

4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application (PTO-152)

6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .

7. ☒ Examiner's Amendment/Comment

8. ☒ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____ .

# Detailed Action

## Specification

1.    The Examiner accepts the amendment to the specification.

## Response to Argument

2.    Applicant's arguments, see amendment, filed on February 28, 2005, with respect to claim 1 have been fully considered and are persuasive.  The rejection of claims 1 and 2 and the objection of claims 3-6 have been withdrawn.

## Allowance

3.    _Claims 1-6_ are allowed. The following is an examiner's statement of reasons for allowance:

_In reference to claim 1:_  _Fernandez et al._ (IEEE Article, 'Texture Segmentation of a 3D Seismic Section with Wavelet Transform and Gabor Filters') teaches a method of seismic data processing (_Fernandez et al._, Abstract and page 355, wavelet packet transform). The method includes using a seismic source for propagating seismic wave into an earth formation and receiving a signal indicative of a property thereof, where the signal resulting from interaction of the seismic waves with the earth formation (see _Fernandez et al._, page 354, section 1: Introduction and section 2, Seismic Data, paragraph 1), but _Fernandez et al._ deals

with a one dimensional wavelet and transforming it into two sub-signals which can be considered as the parent and children nodes of the tree.

Whereas the claimed invention includes defining a plurality of wavelet signals, determining a particular one of the plurality of the wavelets most characteristic of the received signal and adding this particular one of the plurality of wavelets to a select list of wavelets.

The remaining claims are dependent upon *claim 1* and contain further limitations.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

## Conclusion

4.    *Citation of pertinent prior art:*

a.    *Graps* (IEEE Article, 'An Introduction to Wavelet') teaches the history of wavelet beginning with Fourier Transform, compare wavelet transform to Fourier transforms, state properties and other aspects of wavelet. Further, the paper discusses interesting applications, such as image compression, musical tones, and de-noising noisy data.

b.    *Ortega et al.* (U.S. Patent 6,757,343) teaches discrete wavelet transform system architecture design using filter bank factorization.

c.      *Hoffman et al.* (IEEE Article, 'Seismic Buffer Recognition Using Wavelet Based Features') teaches evaluation of different approaches to invalid buffer recognition using wavelet-based feature extraction.

d.      *Villasenor et al.* (IEEE Article, 'Seismic Data Compression Using High-Dimensional Wavelet Transform') teaches a wavelet-based algorithm that operates directly in the highest dimension available and which has been used to successfully compress geophysical data with no observable loss of geophysical information at compression ratios substantially greater than hundred to one.

e.      *Stojanović et al.* (IEEE Article, 'Application of Wavelet Analysis to Seismic Signals') teaches a decomposition of the seismic signal energy into time frequency (TF) where the change is performed by converting scale into frequency.

5.      Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elias Desta whose telephone number is (571)-272-2214.  The examiner can normally be reached on M-Thu (8:30-7:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on (571)-272-2216.  The fax phone numbers for the organization where this application or proceeding is assigned are (703)-872-9306 for regular communications and After Final communications.

Any inquiry of a general nature or relating to the status of this application or

proceeding should be directed to the receptionist whose telephone number is (571)-

272-1750

                                        Elias Desta
                                        Examiner
                                        Art Unit 2857

-ed

May 3, 2005

MARC S. HOFF
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800